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IS 14953 (2006): Textiles - Polyester or Polyamide Mosquito Nets [TXD 20: Made-up Textiles]

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(पहला पुनरीक्षण)

Indian Standard

TEXTILES — POLYESTER OR POLYAMIDE MOSQUITO NETS — SPECIFICATION

(First Revision)

ICS 59.060.20; 59.080.99

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 2006

Price Group 3

Made-up Textiles (Including Ready Made Garments) Sectional Committee, TX 20

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Made-up Textiles (Including Ready Made Garments) Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 2001 and has now been revised on the basis of experience gained during its use to incorporate the following changes:

a) Only confirmatory test based on solubility in 90 percent phenol or *m*-cresol have been specified for the identification of fibre of netting, that is, polyester or polyamide.

b) Reinforcement at bottom has been revised to specify reinforcement by a single strip of polyester or polyamide fabric of matching shade of similar mass per square metre as of netting.

c) Specific requirements of sewing thread used for stitching have been specified.

d) Requirements for flame resistance have been specified in place of flammability as flammability requirements are not applicable for the netting as per scope of IS 11871 : 1986 'Method for determination of flammability and flame resistance of textile fabrics'.

e) Sampling and criteria for conformity has been modified as per corresponding National and International Standards.

f) Thickness for low density polyethylene film used for packing has been modified to suit the requirements of lighter load after nets being packed.

Polyester or polyamide nets are finding wide acceptance in providing effective protection against mosquito attacks in view of smaller mesh size. Further these are lighter in weight, durable, odourless, non-staining and abrasion resistant with no chances of rotting and need minimum care in use. These can also provide effective ventilation of air without suffocation.

This standard covers two mesh sizes of mosquito nets. Mesh size of 156 provides the best combination of ventilation and protection against mosquito attacks in hot climates while mesh size of 196 is more suitable for cold climates.

The composition of Committee responsible for the formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — POLYESTER OR POLYAMIDE MOSQUITO NETS — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements for three varieties of mosquito nets, made of polyester or polyamide mosquito nettings.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated at Annex A.

3 MATERIALS

3.1 Nettings

3.1.1 The nettings shall be made from Polyamide (Nylon 6 or Nylon 6.6) multifilament yarns of 40 denier for Variety 1 and polyester multifilament yarns of 75 denier for Variety 2 or 100 denier for Variety 3. The denier of multifilament yarns as specified above shall be within ±10 percent tolerance when tested by the method given in IS 7703 (Part 1). The mesh of the netting shall normally be round. However square or hexagonal mesh may also be used, if required by the buyer.

3.1.2 The fibres as specified in **3.1.1** shall be identified by dissolving their specimen in 90 percent phenol or *m*-cresol as specified in **C-2.1** and **C-2.2** of IS 667.

3.2 The netting shall also conform to the requirements specified in Table 1.

4 MANUFACTURE AND WORKMANSHIP

4.1 Wall and Top

The top shall be made from one piece of netting in case of bed nets meant for single bed and single joint piece in case of double/family/X family bed nets. The

Table 1 Requirements of Netting

(*Clause* 3.2 and *Table* 6)

Sl No.	Characteristic	Requirement			Method of Test, Ref to
		Variety 1	Variety 2	Variety 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Width (excluding selvedge), cm	◄—— As agreed ± 2.0 cm ——►			IS 1954
ii)	Mass, g/m^2				IS 1964
	a) For 156 mesh	21 ± 5 percent	$28^{+5}_{-2.5}$ percent	40 ± 5 percent	—
	b) For 196 mesh	27 ± 5 percent	37 ± 2.5 percent	60 ± 5 percent	—
iii)	No. of holes along base plus bias within 6.25 cm^2 area:				Annex A of IS 1431
	a) For 156 mesh	28-33	28-33	28-33	—
	b) For 196 mesh	31-36	31-36	31-36	—
iv)	Bursting strength, kPa, *Min*:				IS 1966
	a) For 156 mesh	176	274	350	—
	b) For 196 mesh	225	350	450	—
v)	*p*H Value of aqueous extract (Cold method)	6.0-7.5	6.0-7.5	6.0-7.5	IS 1390
vi)	Water soluble matter, percent, *Max*	1.0	1.0	1.0	IS 3456
vii)	Colour fastness to (applicable to coloured nettings):				
	a) Washing: Test 3, *Min* (Change in colour)	4	4	4	IS 764
	b) Light, *Min*	5	5	5	IS 2454

walls shall be made from one piece of netting and shall be closed with lapped seam and the seam shall be at one of the corners (*see also* **5.4**). One edge of the netting of the wall shall be attached to the netting at the top by means of a plain seam as shown in Fig. 1.

4.2 Reinforcement at Bottom

If specified by the buyer, the bottom of the walls shall be reinforced by stitching a single strip of netting of same fibre, same mass per square meter and of matching shade as the original netting by a lapped seam as shown in Fig. 1.

4.3 Tying Loops

The polyamide or polyester nets shall be provided with polyamide or polyester stitched tying loops respectively at the roof, four in case of single nets and six in case of double, family and X-family nets. The loops shall be 12 to 15 mm wide and made of the same fabric as of the wall and top, as shown in Fig. 1. In case of nets ordered with bottom reinforcement, four tying loops shall be provided at the seam joining the bottom reinforcing piece.

4.4 Stitching

The nets shall be made with lock stitch of even tension throughout and loose ends securely fastened off. The number of stitches per decimeter shall be 30 to 38. The stitching shall be made by using spun polyester sewing thread of matching shade conforming to the requirements given in Table 2.

5 REQUIREMENTS

5.1 The general make up of the net shall be as shown in Fig. 1.

5.2 The dimensions of the nets shall conform to those given in Table 3 when determined by the methods prescribed in IS 1954.

5.3 Colour/Shade

The colour/shade of nets shall be as specified in the contract or order. In case a sample has been agreed upon and sealed, the supply shall be made in conformity with that sample in such respects.

5.4 Joined Nets

The joined nets shall be permitted in maximum 20 percent of the supply and no net shall have more than two joints except for X-family nets where 100 percent joined nets in the roof part shall be permitted without any restriction to number of joints. However, the

Table 2 Requirements of Sewing Thread Used for Stitching Nets

(*Clause* 4 .4)

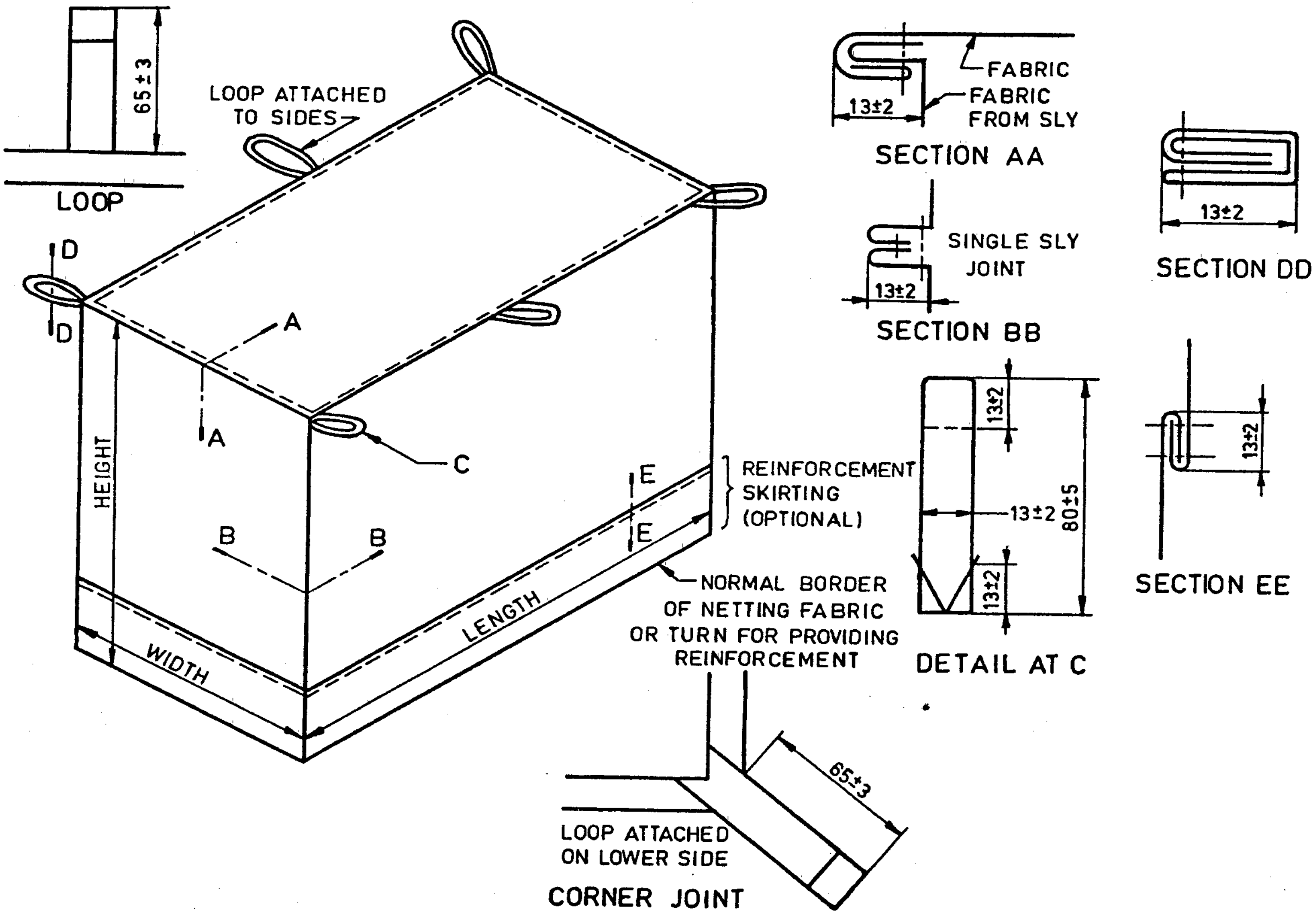
Sl No. (1)	Requirement (2)	Specified Value (3)	Method of Test, Ref to (4)
i)	Tenacity, mN/tex, *Min*	29.4	IS 7703 (Part 2)
ii)	Elongation at break, percent, *Max*	20	IS 7703 (Part 2)
iii)	Residual shrinkage at 150°C, percent, *Max*	2.0	A-3 of IS 9543
iv)	Colour fastness (applicable to coloured sewing threads only) rating, *Min*:		
	a) Light	5	IS 2454
	b) Washing: Test 3		IS 764
	1) Change in colour	4	—
	2) Staining of adjacent fabrics	4	—

Table 3 Dimensions of Mosquito Nets

(*Clause* 5.2)

Sl No.	Dimensions/Value	Type of Mosquito Nets			
		Single Nets	Double Nets	Family Nets	X-Family Nets
(1)	(2)	(3)	(4)	(5)	(6)
i)	Length, cm	180 ± 5	180 ± 5	180 ± 5	180 ± 5
ii)	Width, cm	70 ± 3	100 ± 4	130 ± 5	190 ± 5
iii)	Overall height (including bottom reinforcement piece), cm	150 ± 5	150 ± 5	150 ± 5	150 ± 5
iv)	Height of reinforcement, cm	28 ± 3	28 ± 3	28 ± 3	28 ± 3

NOTE — Any other dimensions may also be used as per agreement between the buyer and the seller subject to tolerances as indicated above.



All dimensions in millimetres.

FIG. 1 TYPICAL MOSQUITO NET

width of the panel in the joined net shall not be less than 1 m.

5.5 Flame Resistance

If required by the buyer, the nets shall also be made flame resistant. Such mosquito nets shall comply with the requirements given in Table 4 when tested by the Method A prescribed in IS 11871.

Table 4 Requirements for Flame Resistance of Nets

Sl No. (1)	Requirement (2)	Specified Value (3)
i)	Char length, cm, *Max*	10
ii)	After-flame time, *Max*	20
iii)	After-glow time, *Max*	10
iv)	Occurrence of flash over surface of fabric	Nil
v)	Any abnormal behaviour occurring under the influence of flame, for example, melting, dripping, shrinking from flame and abnormal charring	Nil

6 MARKING

6.1 The following information shall be indelibly marked on the cloth label securely stitched at any top corner of the net:

a) Indication of the source of manufacture;

b) Size of the net, namely, overall length (cm) × overall width (cm) × overall height (cm);

c) Fibre of netting and its variety number;

d) Type of mosquito net, namely, Single, Double, Family or X-Family net;

e) Mesh size;

f) Month and year of manufacture;

g) Flame resistance (if applicable); and

h) Any other information mentioned in the contract or order or statutory provisions.

6.2 The information as given in **6.1**(a) to **6.1**(h) along with the number of pieces shall also be printed or stenciled on each bale.

6.3 BIS Certification Marking

The mosquito nets may also be marked with the Standard Mark.

6.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which a license for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

7 PACKING

The mosquito nets shall be packed as stipulated in the contract or order. However, a recommended procedure is given below:

> 25 to 50 mosquito nets depending upon size shall be placed one over the other and tied with a twine or rope of 2 to 3 mm dia made of cotton or polyester or polyamide to form a bundle. 2 to 4 such bundles shall be wrapped in low density polyethylene film (LDPE) of minimum thickness of 40 microns or in any other suitable material as agreed to between the buyer and the seller to form a bale. The bale shall be stitched by HDPE or nylon twine/rope such that the nets do not get pierced and the bale remains intact after packing without damaging the mosquito nets during handling or storage. The bale shall be strapped along with clips.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Lot — The quantity of mosquito nets of same type, variety and mesh size delivered to a buyer against one dispatch note shall constitute a lot.

8.2 For assessing the conformity of the lot to the requirement of this standard, the sample as given in col 2 or col 3 of Table 5 shall be drawn at random from the lot. To ensure the randomness of selection, method given in IS 4905 shall be followed.

Table 5 Sample Size

(*Clause* 8.2 and *Table* 6)

Number of Nets in the Lot (1)	Sample Size (No. of Nets) (2)	Sub-sample Size (No. of Nets) (3)	Acceptance Number (4)
Up to 50	5	3	0
51-150	8	5	0
151-300	13	5	1
301-500	20	8	1
501 and above	32	8	2

8.3 A piece of mosquito net shall be considered defective, if it does not meet any of the requirements specified in this standard.

8.4 The lot shall be declared as conforming to the requirements of this standard, if the conditions given in Table 6 are complied.

Table 6 Criteria for Conformity

(*Clause* 8.4)

Sl No. (1)	Characteristic (2)	Sample Size (3)	Criteria for Conformity (4)
i)	Fibre and variety of netting; manufacture and workmanship; dimensions; flame resistance; and colour/shade	According to col 2 of Table 5	Permissible number of defective nets shall not exceed the corresponding number given in col 4 of Table 5
ii)	All other requirements (Requirements of nettings as specified in Table 1 and of joined nets as specified in 5.4)	According to col 3 of Table 5	All the samples shall conform to the relevant requirements as specified in Table 1 and 5.4

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
667 : 1981	Method for identification of textile fibres (*first revision*)
764 : 1979	Method for determination of colour fastness of textile materials to washing: Test 3 (*second revision*)
1390 : 1983	Methods for determination of *p*H value of aqueous extracts textile materials (*first revision*)
1431 : 1973	Specification for cotton mosquito netting, round mesh (*first revision*)
1954 : 1990	Determination of length and width of woven fabrics — Methods (*second revision*)
1964 : 2001	Method for determination of mass per unit length and mass per unit area of fabrics (*second revision*)
1966 : 1975	Methods for determination of bursting strength and bursting distention of fabrics — Diaphragm method (*first revision*)
2454 : 1985	Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp) (*first revision*)
3456 : 1966	Method for determination of water soluble matter of textile materials
4905 : 1968	Methods for random sampling
7703	Methods of test for continuous filament polyester and polyamide flat yarn:
(Part 1) : 1990	Linear density (*first revision*)
(Part 2) : 1990	Tenacity and elongation at break (*first revision*)
9543 : 1980	Specification for spun polyester sewing threads
11871 : 1986	Methods for determination of flammability and flame resistance of textile fabrics

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Made-up Textiles (Including Ready Made Garments) Sectional Committee, TX 20

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National Institute of Fashion Technology, New Delhi	Dr Sanjay Gupta (***Chairman***) Shri Satish Bhardwaj (*Alternate*)
Ahmedabad Textile Industry's Research Association, Ahmedabad	Shri C. R. Prayag Shrimati Vrunda Doctor (*Alternate*)
Apparel Export Promotion Council, New Delhi	Shri R. K. Sharma
Apparel Exporters & Manufacturers Association, New Delhi	Representative
Biotech International Ltd, Ghaziabad	Shrimati Shabnam Singhal Shri G. D. Bhargava (*Alternate*)
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The South India Textile Research Association, Coimbatore	Shri S. Kadirvel Shri R. Ramamurthy (*Alternate*)
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Shri P. Bhatnagar
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